

REMARKS/ARGUMENTS

Claim Status

Claims 1 and 3-20 are pending. Claim 2 was previously canceled without prejudice. Claims 1, 7 and 13 are currently amended. Amended claims 1, 7 and 13 now include component (A-2) along with a mass% range of part of (A-1) which find support in the specification: page 18, line 5 to page 20, line 10 from the bottom; page 27, lines 12-25; page 46, line 21 to page 47, line 2; page 47, line 18 to page 48, line 6; and page 66, lines 3-11. No new matter is believed to have been entered.

§102(b) Rejections

Claims 1, 3, 5 and 6 are rejected under 35 U.S.C. §102(b) as anticipated by *Hirai* (US 6,664,313). Applicants respectfully traverse these rejections.

Hirai discloses a polycarbonate resin composition comprising:

- (a) 100 parts by weight of an aromatic polycarbonate resin,
- (b) 3 to 30 parts by weight of titanium oxide,
- (c1) 0.01 to 9 parts by weight of silica,
- (c2) 0.01 to 9 parts by weight of polyorganosiloxane polymer, and
- (d) 0.01 to 5 parts by weight of polytetrafluoroethylene

(Abstract; claim 1). *Hirai* also generically discloses preferred aromatic polycarbonate resins (a) as being “derived from 2,2-bis(4-hydroxyphenyl)propane and the polycarbonate polymers derived from 2,2-bis(4-hydroxyphenyl)propane and other aromatic dihydroxyl compounds”, possibly having a copolymerized siloxane structure, and possibly being “a mixture of two or more types of aromatic polycarbonate resin differing in composition, molecular weight, etc.” (col. 2, line 57, to col. 3, line 2).

Furthermore, *Hirai* discloses what is meant by (c2) the polyorganosiloxane polymer in column 5 (lines 40-57) as follows:

The organic group possessed by the polyorganosiloxane polymer (c2) is selected from hydrocarbon or halogenated hydrocarbon groups such as C₁-C₂₀ alkyl and substituted alkyl, alkenyl groups such as vinyl and 5-hexenyl, cycloalkyl groups such as cyclohexyl, and aromatic hydrocarbon groups such as phenyl, benzyl and tolyl. C₁-C₄ lower alkyl groups, phenyl group, and halogen-substituted alkyl groups such as 3,3,3-trifluoropropyl are preferred. The polyorganosiloxane polymer (c2) may be either linear or branched, but a linear polydimethylsiloxane with no branching group is preferred.

The polyorganosiloxane polymer (c2) may be either a polyorganosiloxane polymer (c21) having no functional group in the molecular chain or a polyorganosiloxane polymer (c22) having a functional group in the molecular chain. In the case of a polyorganosiloxane polymer (c22) having a functional group, the functional group is preferably a methacrylic group or an epoxy group.

In contrast to *Hirai*, the claimed light reflection sheets (independent claims 1, 7 and 13) comprise a polycarbonate resin composition comprising 60 to 85 mass% of (A) a polycarbonate base polymer and 15 to 40 mass% of (B) titanium oxide, wherein (A) comprises (A-1) a polycarbonate-polyorganosiloxane copolymer and (A-2) a polycarbonate resin, wherein the polyorganosiloxane of the polycarbonate-polyorganosiloxane copolymer of (A-1) is 0.3 to 10 mass% of the total of (A-1) and (A-2), and (A-1) is 10 to 58 parts by mass per 100 parts by mass of the total of (A) and (B).

While the Office has equated Applicants' (A-1) to *Hirai*'s (a) and (c2), this "equivalence" is not correct. *Hirai* discloses two potential combinations of (a) and (c2):

- (1) (a) an aromatic polycarbonate resin, and
(c2) a polyorganosiloxane polymer; and
- (2) (a) the aromatic polycarbonate resin copolymerized with a polymer or oligomer with a siloxane structure (see col. 2, lines 62-64), and
(c2) a polyorganosiloxane polymer.

Neither (1) nor (2) of *Hirai* equate to Applicants' claimed (A) comprising:

- (A-1) a polycarbonate-polyorganosiloxane copolymer, and
- (A-2) a polycarbonate resin.

Accordingly, the composition of *Hirai* comprising (a), (b), (c1), (c2) and (d) does not disclose or suggest the claimed sheets comprising (A-1), (A-2) and (B).

Furthermore, the Office performs parts by weight calculations to assert that the compositions of *Hirai* also meet the claimed mass% limitations. Applicants would like to bring to the Office's attention that the calculations performed appear to be incorrect due to the lack of consideration of "100 parts by weight of the aromatic polycarbonate resin (a)" of the composition (see col. 2, lines 7-13; see also Applicants summary of the *Hirai* composition above that includes the parts by weight breakdown of each component).

Moreover, it appears to Applicant that if one were to equate the claimed "(A-1) is 10 to 58 parts by mass per 100 parts by mass of the total of (A) and (B)" to *Hirai*'s (c2) alone or *Hirai*'s (c2) plus (a) (even though this "equivalence" is not correct as explained above), one would not obtain mass% values within the claimed range¹. For example, if (c2) is considered equivalent to (A-1), then the mass% of (c2) is at most approximately 8.7 mass% [(c2) is 0.01-9 parts by weight while (a)+(c2)+(b) is 103.01-139 parts by weight]. If (c2)+(a) is considered equivalent to (A-1), then the mass% of (c2)+(a) is at the least, approximately 72 mass% [(c2)+(a) is 100.01-109 parts by weight while (a)+(c2)+(b) is 103.01-139 parts by weight]. Neither 8.7 nor 72 mass% are within the claimed range of "(A-1) is 10 to 58 parts by mass per 100 parts by mass of the total of (A) and (B)".

Lastly, as explained above, since *Hirai* does not disclose or suggest Applicants' (A-1), *Hirai* can not then be said to disclose or suggest the claimed limitation of "the polyorganosiloxane of the polycarbonate-polyorganosiloxane copolymer of (A-1) is 0.3 to 10 mass% of the total of (A-1) and (A-2)".

Accordingly, for at least those reasons discussed above, *Hirai* does not anticipate the claimed invention and Applicants request withdrawal of the anticipation rejection over *Hirai*.

¹ Calculations based on equating Applicants' (A)+(B) to *Hirai*'s (a)+(c2)+(b).

§103(a) Rejections

Claim 4 is rejected under 35 U.S.C. §103(a) as obvious in view of *Hirai*. Claims 7-20 are rejected under 35 U.S.C. §103(a) as obvious in view of *Hirai* and *Ekinaka* (US 6,846,567). Applicants respectfully traverse these rejections.

In addition to the disclosure of *Hirai* as described above, *Ekinaka* discloses a surface-protected plastic composite material comprising a transparent plastic (e.g., an aromatic polycarbonate resin), a coating layer, and a thermally cured coating layer (Abstract; claim 1; col. 4, line 11, to col. 5, line 55). However, just as *Hirai*, *Ekinaka* is also silent with respect to a polycarbonate resin composition comprising (A) a polycarbonate base polymer which in turn comprises (A-1) a polycarbonate-polyorganosiloxane copolymer *and* (A-2) a polycarbonate resin, in specified amounts (see §102(b) section above for further detail). Accordingly, *Ekinaka* and *Hirai* share the same deficiency (i.e., disclosure or suggestion of Applicants' (A-1) and (A-2)). Therefore, the combination of *Ekinaka* and *Hirai* retains the deficiency. Thus, the combination of *Ekinaka* and *Hirai* does not disclose or suggest the claimed invention.

Moreover and as further evidence of the non-obviousness of the claimed invention, Applicants' specification describes that when component (A-1) is contained in the polycarbonate resin composition in an amount less than the preferred range (i.e., 10-58 parts by mass per 100 parts by mass of the total of (A) and (B)), the polyorganosiloxane is deteriorated in dispersibility and inferior flame retardancy is obtained (page 26, line 20, to page 27, line 5). In contrast, when component (A-1) is contained in the polycarbonate resin composition in an amount satisfying the preferred range (i.e., 10-58 parts by mass per 100 parts by mass of the total of (A) and (B)), a light reflection sheet having a superior flame retardancy is obtained (page 27, lines 5-8).

Additionally, Applicants' specification describes that when the polyorganosiloxane part of component (A-1) is contained in the polycarbonate resin composition in an amount less than the preferred range (i.e., 0.3 to 10 mass% of the total of (A-1) and (A-2)), the desired oxygen index is not obtained and inferior flame retardancy is obtained (page 27, lines 16-19). Also, when the polyorganosiloxane part of component (A-1) is contained in the polycarbonate resin composition in an amount more than the preferred range (i.e., 0.3 to 10 mass% of the total of (A-1) and (A-2)), the heat resistance of the resin reduced which in turn increases the cost of the resin (page 27, lines 19-22). In contrast, when the polyorganosiloxane part of component (A-1) is contained in the polycarbonate resin composition in an amount satisfying the preferred range (i.e., 0.3 to 10 mass% of the total of (A-1) and (A-2)), a desired oxygen index is obtained and a light reflection sheet having a superior flame retardancy is obtained (page 27, lines 22-25).

Accordingly, in addition to *Hirai's* and *Ekinaka's* lack of disclosure or suggestion of the claimed polycarbonate resin composition comprising (A-1) and (A-2) in specified amounts, these references do not disclose or suggest Applicants' claimed light reflection sheets having the superior properties (e.g., flame retardance and oxygen index) as described above.

Thus, neither of *Hirai* or *Ekinaka*, alone or in combination², disclose or suggest Applicants polycarbonate resin composition as claimed. Therefore Applicants request withdrawal of these obviousness rejections.


² In response to Applicants previous statement to this effect (see response filed December 29, 2008 - page 10, last paragraph) the Office asserts that "one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references" (Office Action, page 10). As can be seen here and in the response filed December 29, 2008, while Applicants may have discussed the deficiencies of the references individually, Applicants have also discussed the deficiencies of the references in combination.

Conclusion

For the reasons discussed above, Applicants submit that all now-pending claims are in condition for allowance. Applicants respectfully request the withdrawal of the objection and rejections and passage of this case to issue.

Respectfully submitted,

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